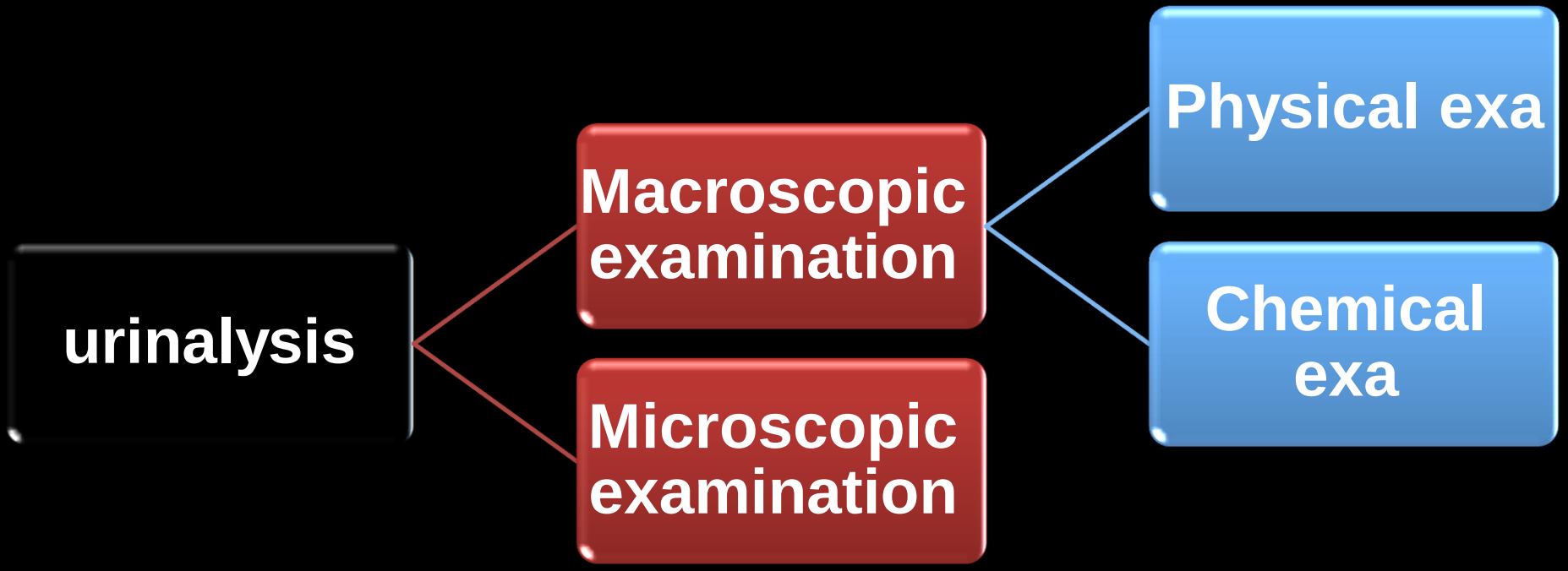
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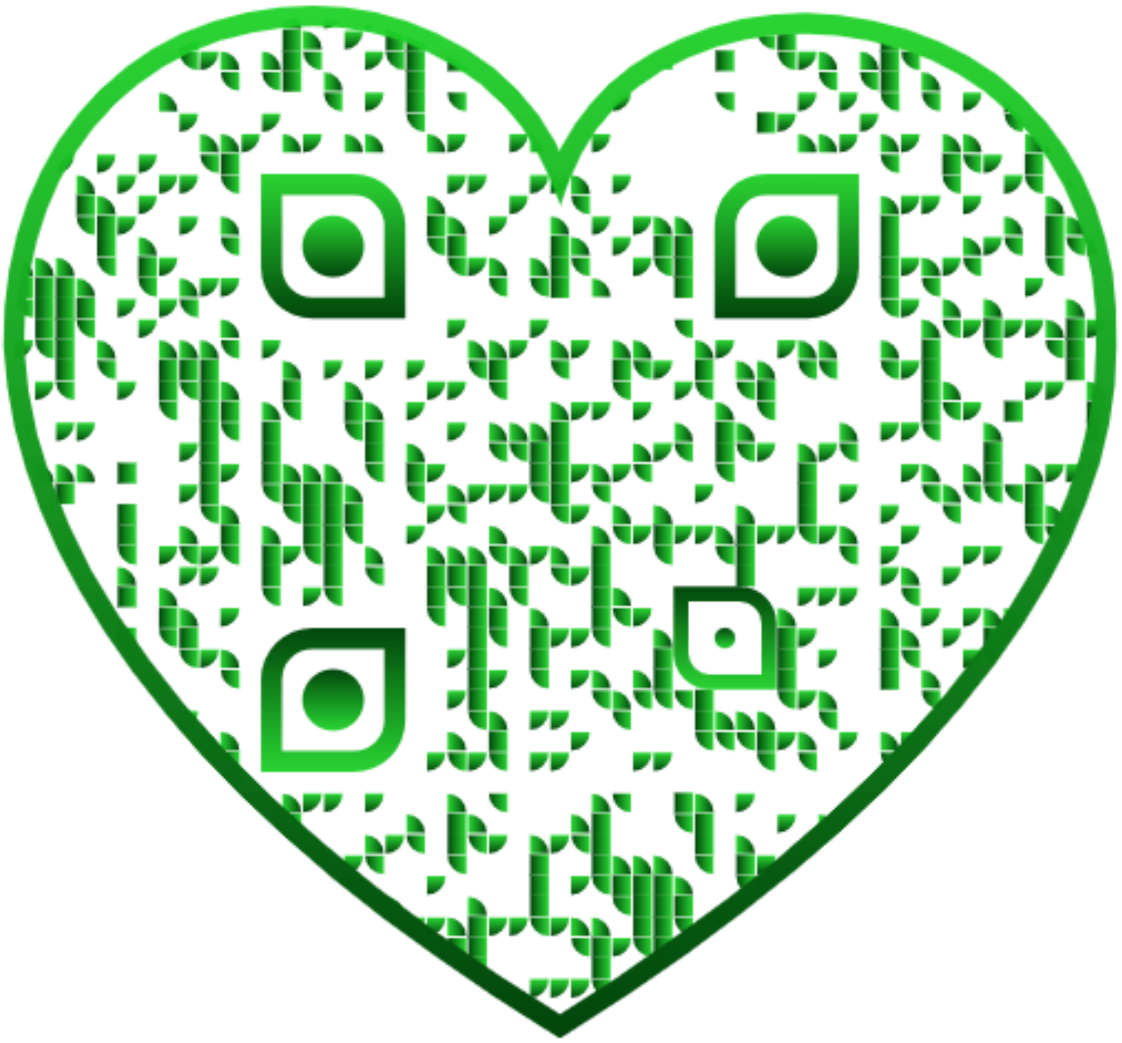
Macroscopic examination
Microscopic examination
Physical exa
Chemical exa



Microscopic Examination procedure

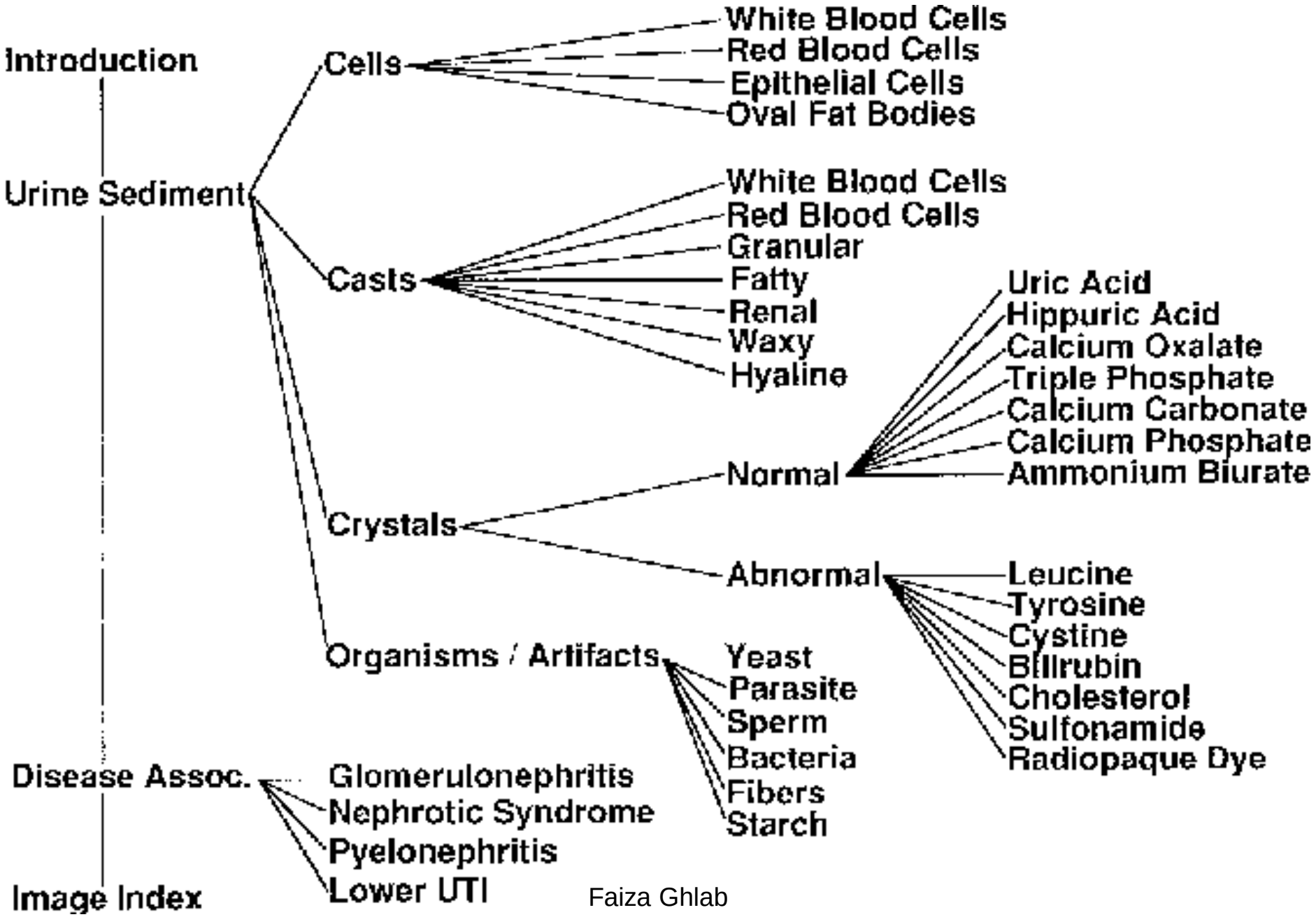
- **Centrifugation:**

1- put about 9 ml of urine sample in to test tube.

2-The urine centrifugation is 5 minute at 1200 rpm

3- Discard supernatant and place one drop of sediment in glass slide.

4-place the glass slide on the microscope.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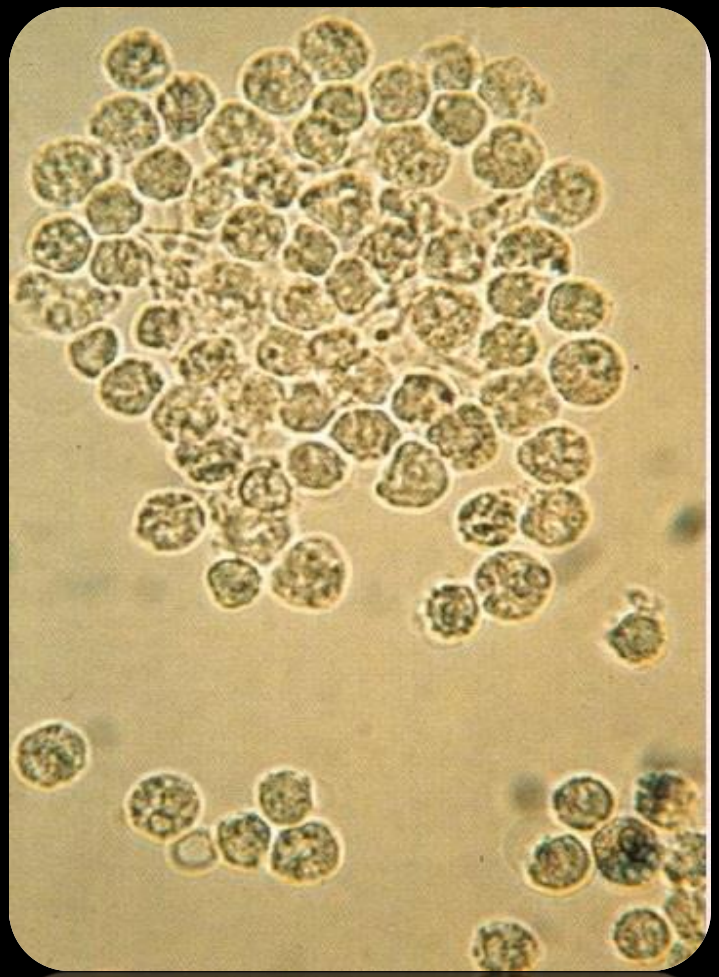
Leukocytes



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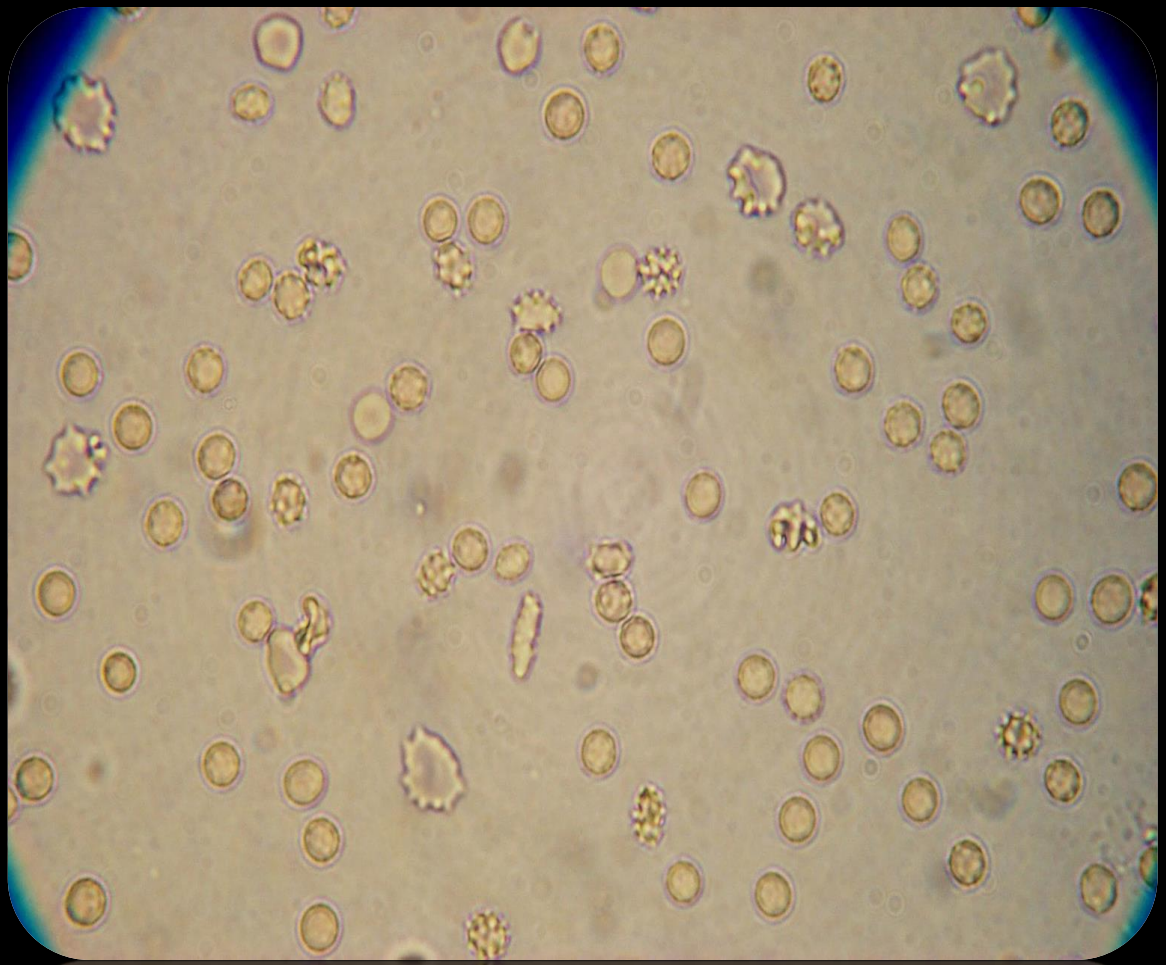
Erythrocytes



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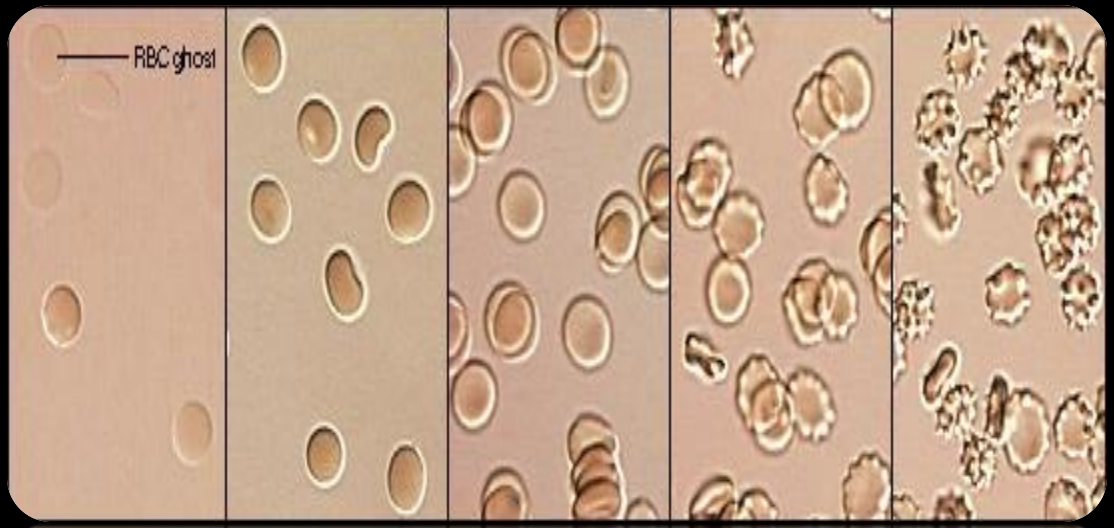
Erythrocytes



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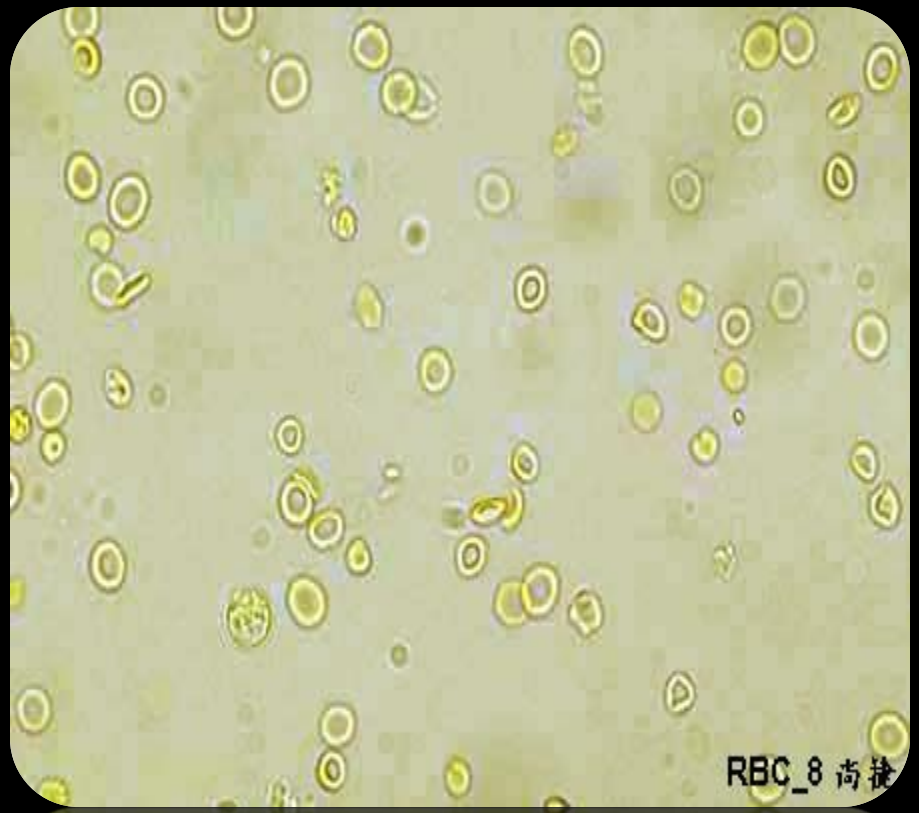
Erythrocytes



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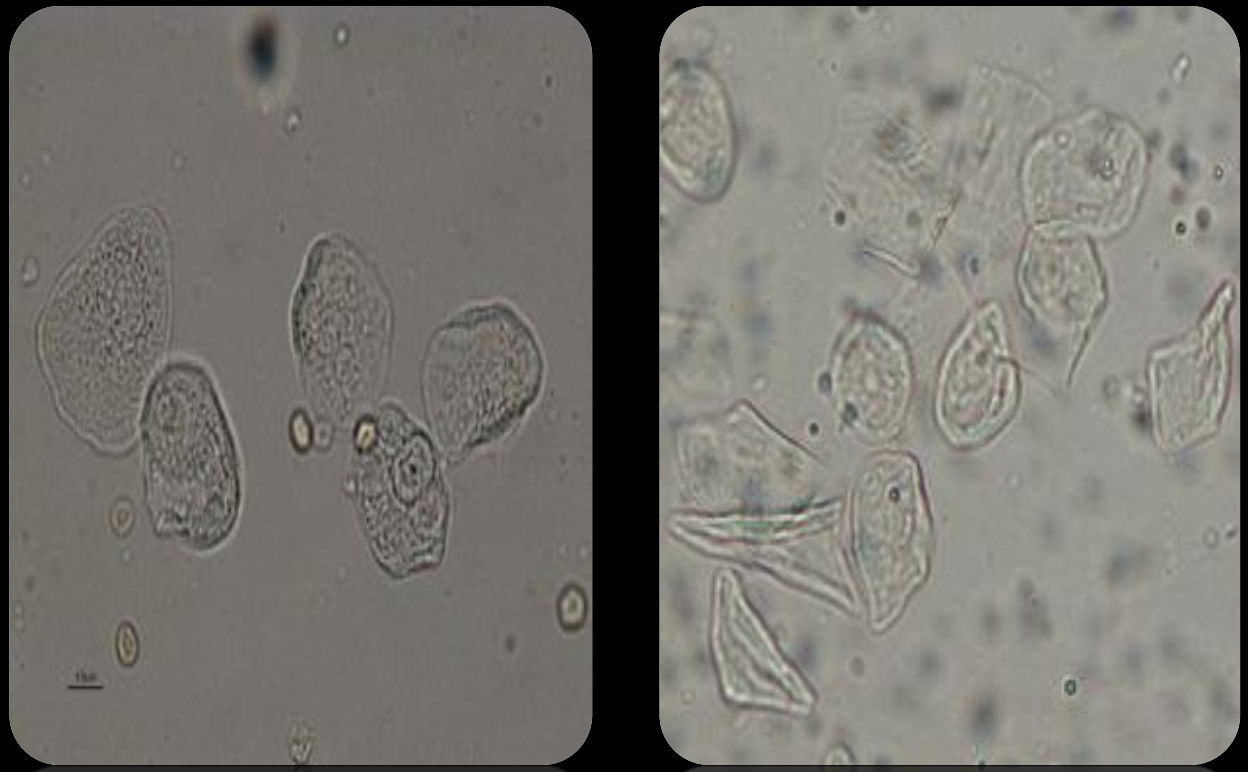
Epithelial Cells (squamous)



Transitional epithelial cells

Renal tubular epithelial cells

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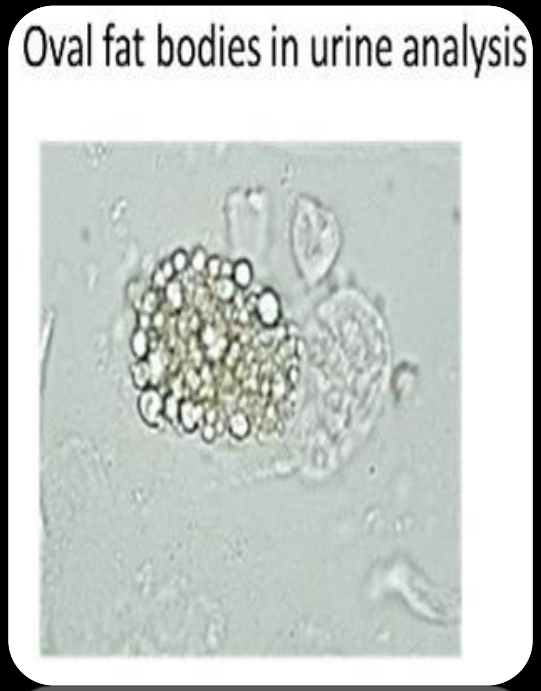
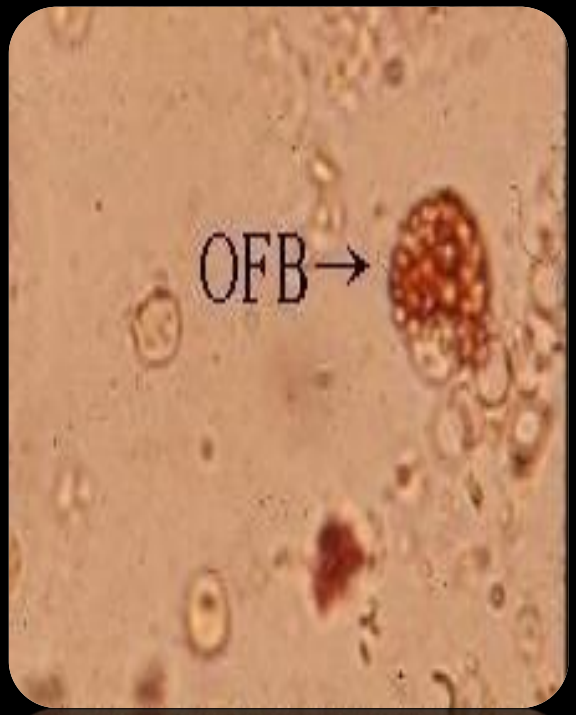
Other cells in urine : e.g. Oval Fat Bodies





Report of cells in urine sedimentation

RBCs: 0-5/HPF

WBCs: 0-5/HPF

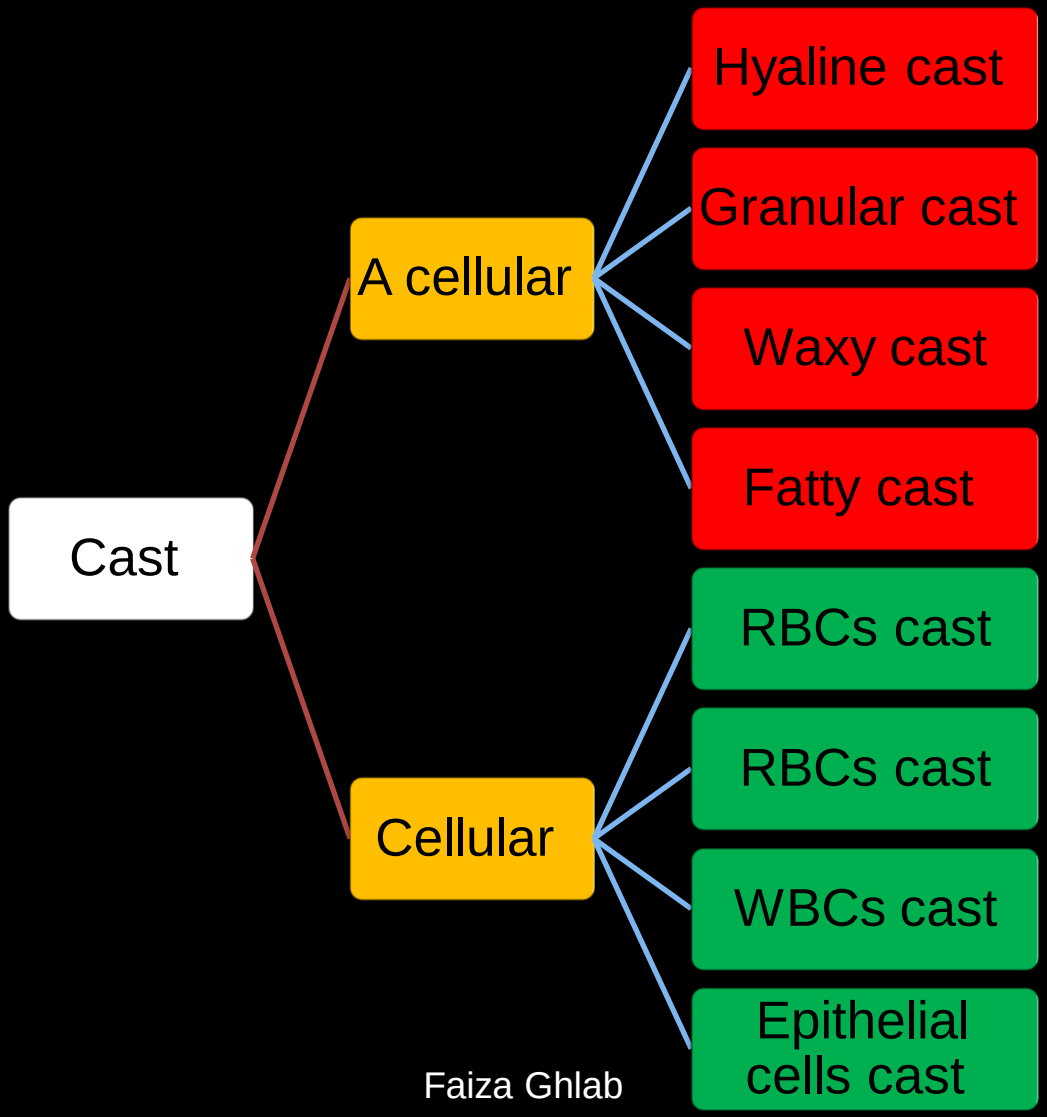
Or express number by words :

15-20 cells/HPF : Many

More than 30 cells/ HPF : Nemours

Full field /HPF : Abundant

Cast



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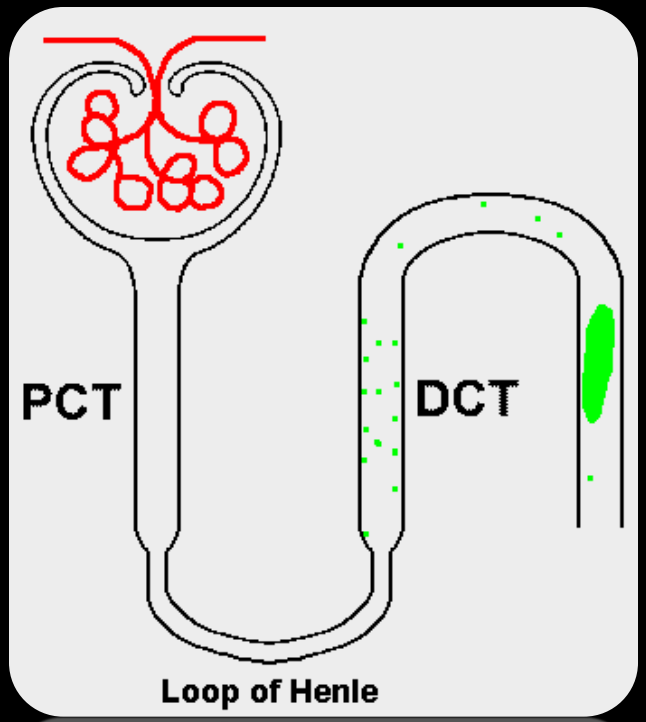
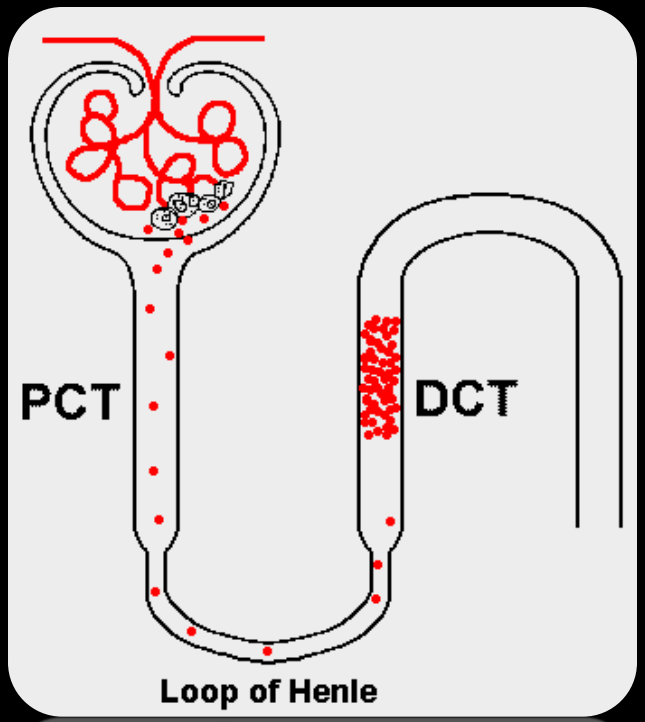
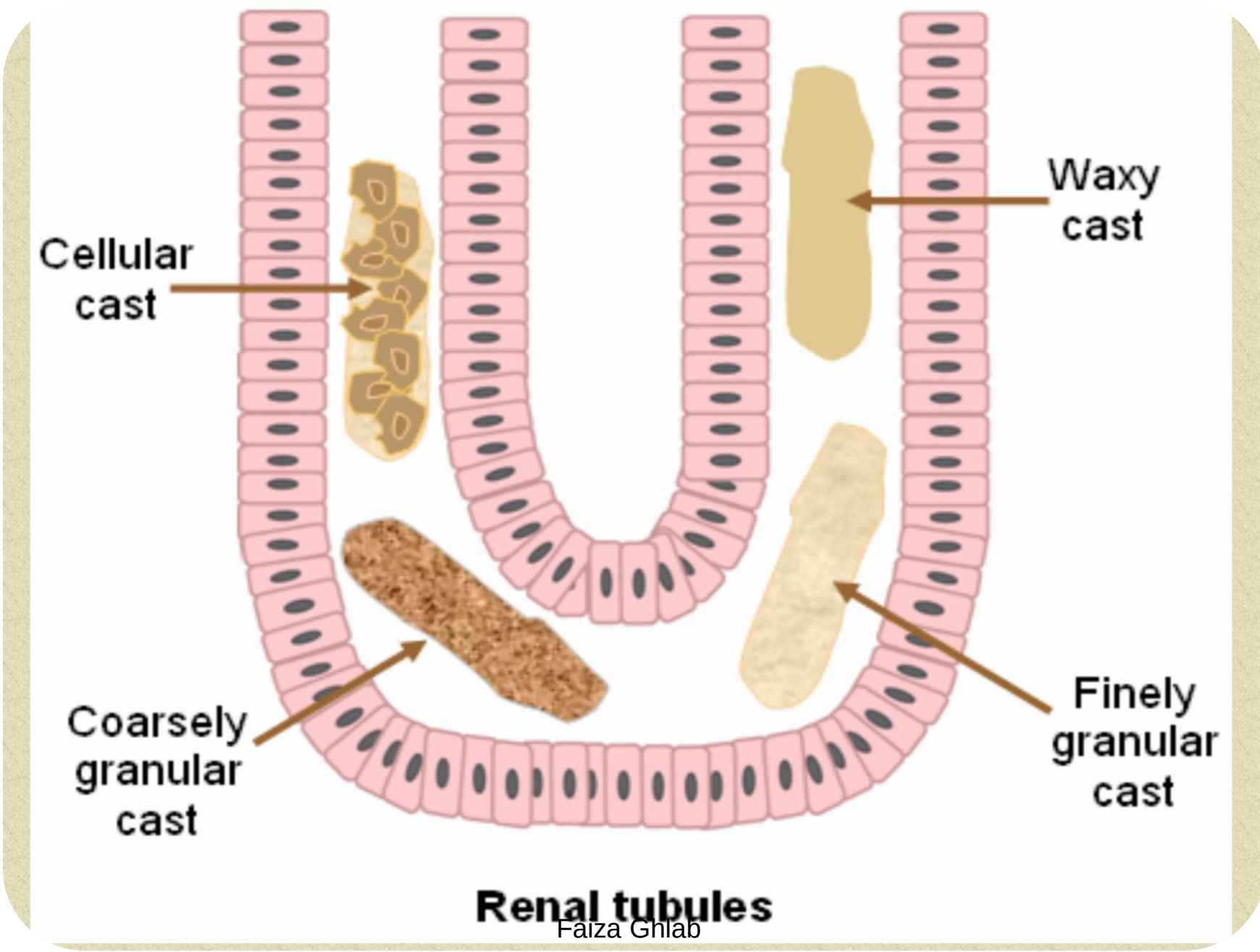
Microscopic Examination

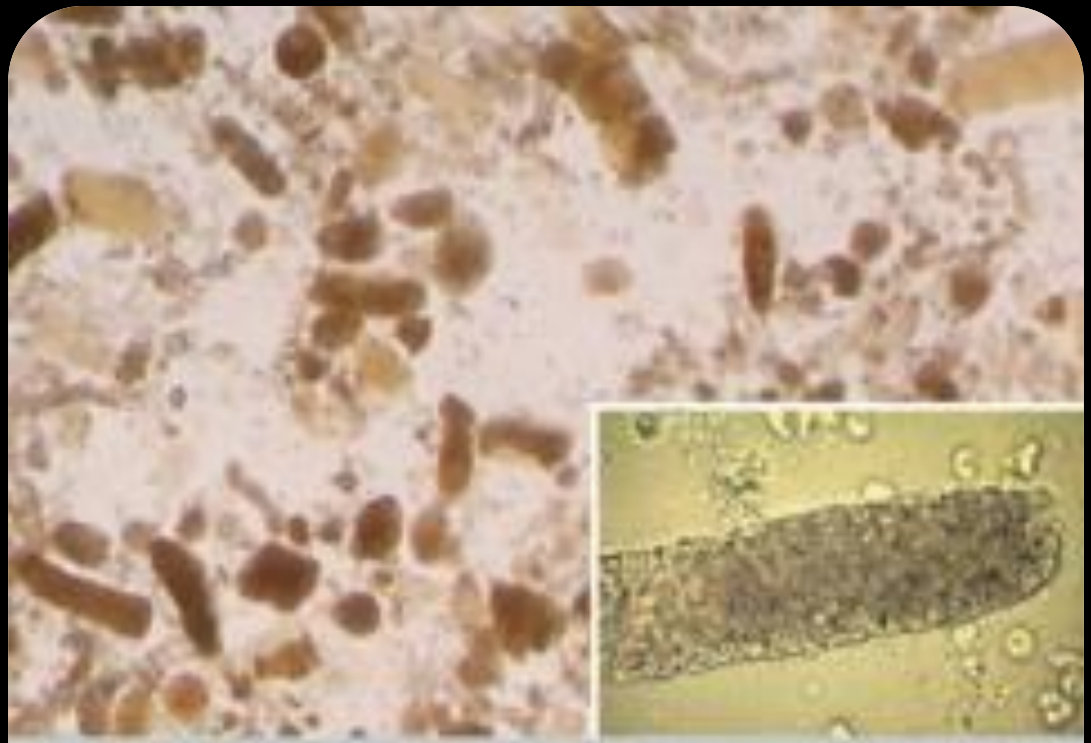
Casts






Cellular cast
Waxy cast
Coarsely granular cast
Finely granular cast
Renal tubules

Muddy brown granular casts



Muddy brown casts in acute tubular necrosis. Inset shows magnified image of cast.

Waxy casts

Fatty casts

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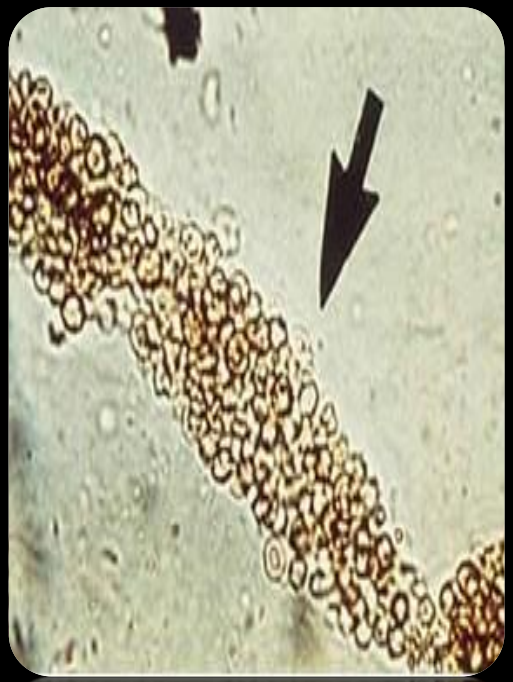
Red blood cells cast



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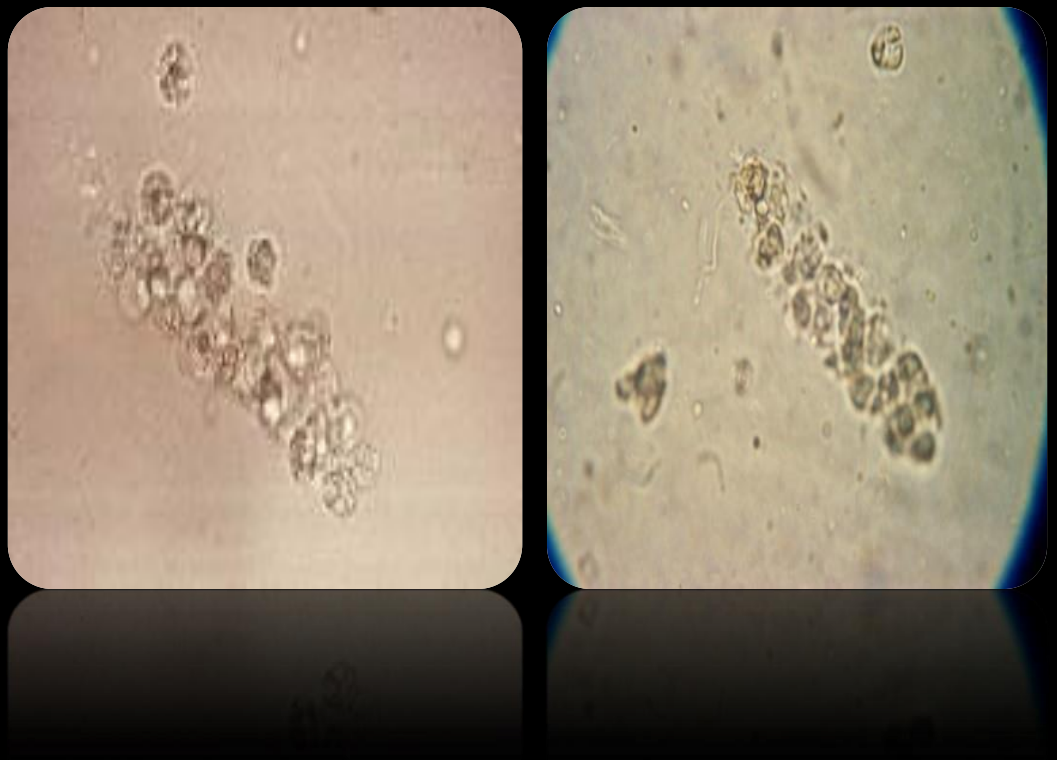
White cells cast



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Report of cast in urine sedimentation

Usually express as number and examine by LPF

e.g. Hyaline cast : 1-2 /LPF

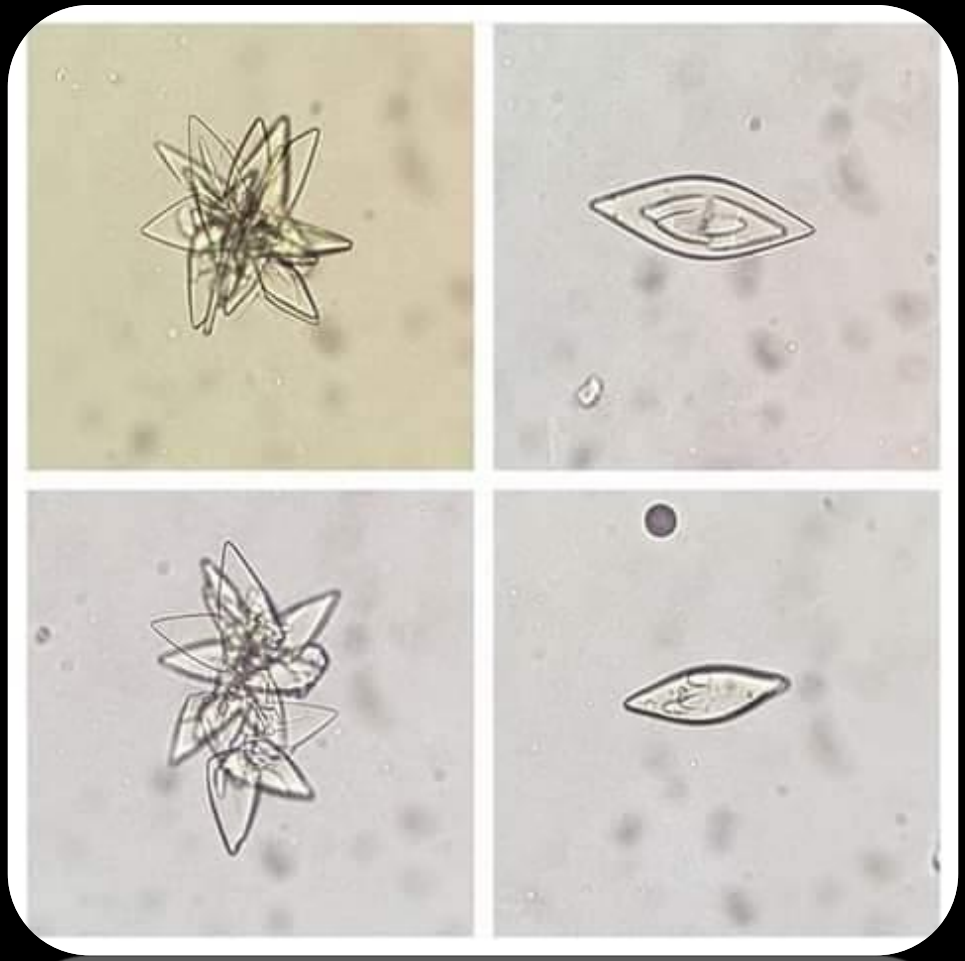
Crystals in urine

Crystals: The type of crystals formed depends on urine pH

Acidic PH crystals	Alkaline PH crystals
• Calcium oxalate.	• Amorphous phosphate.
• Uric acid.	• Triple phosphate
• Amorphous urate.	• Calcium carbonate.
• Leucine.	• Ammonium biurate.
• Tyrosine.	
• Cystine.	

Ca-oxalate crystal

Uric acid crystal



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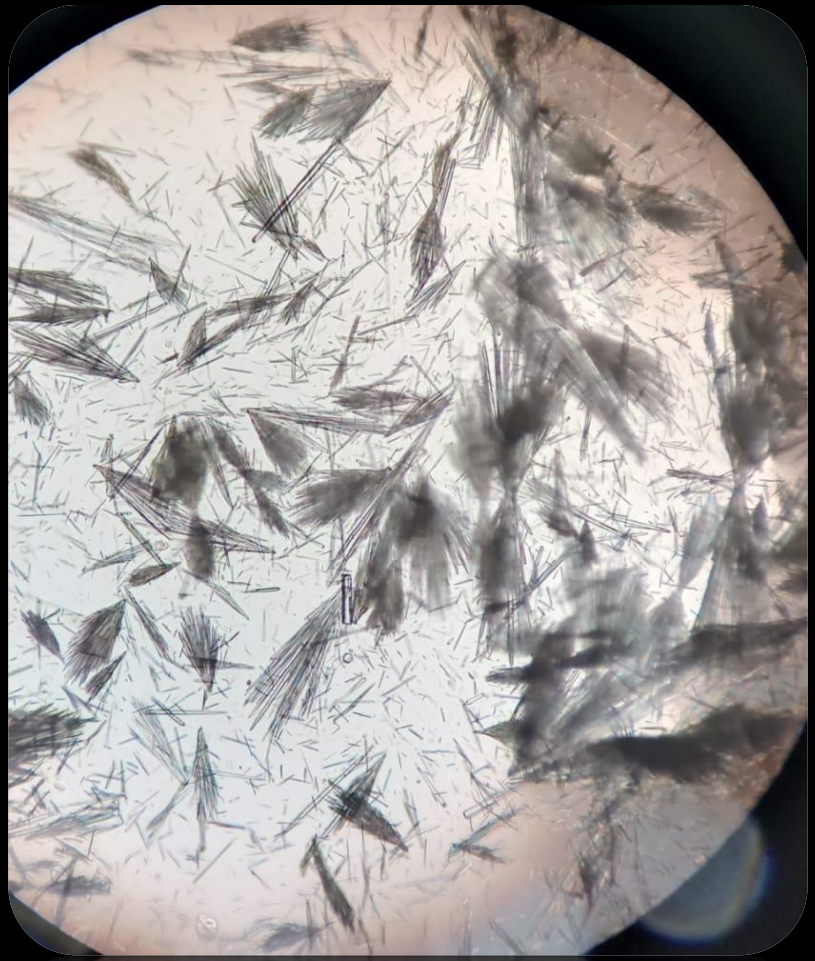
Tyrosine crystals



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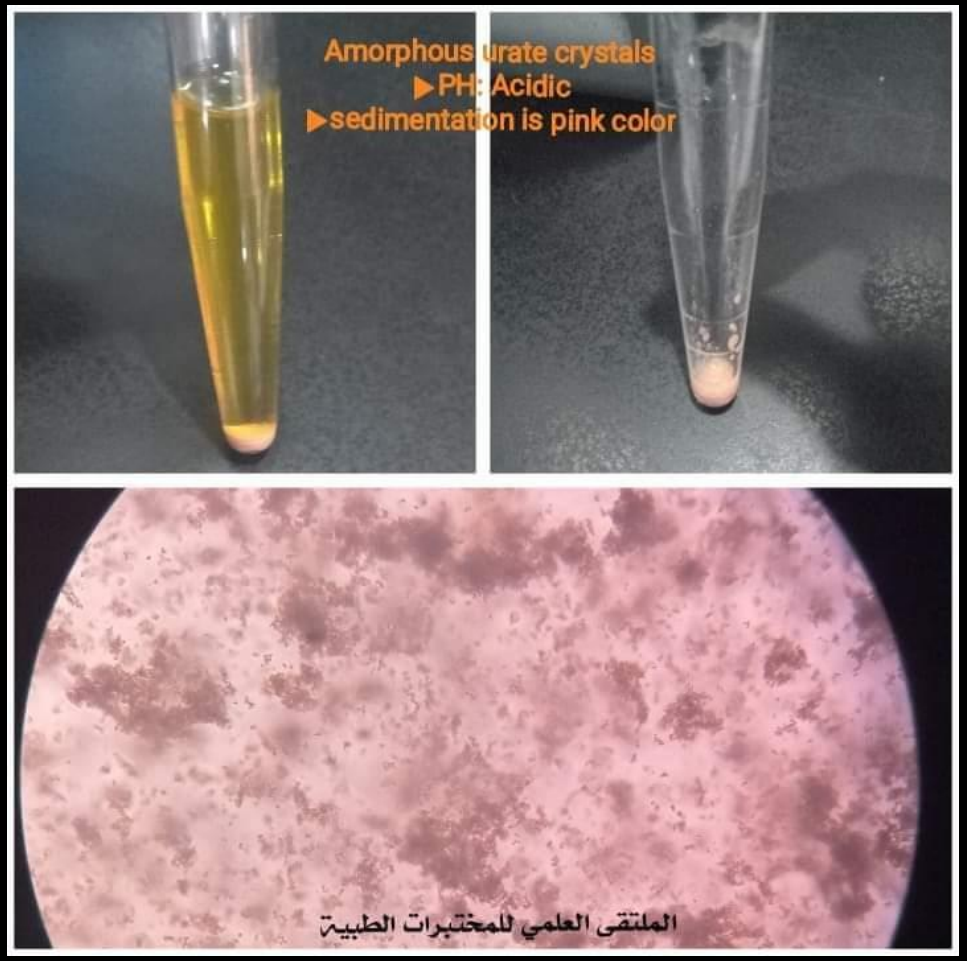
Amorphus urate crystals



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Report of crystals in urine sedimentation

Usually express by plus +

e.g. Ca-oxalate crystals : +

Other findings in urine sedimentation

- Mucus
- Parasite or ova
- Yeast
- Sperm
- Hair ..etc

Mucus

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Schistsoma Hematobium ova

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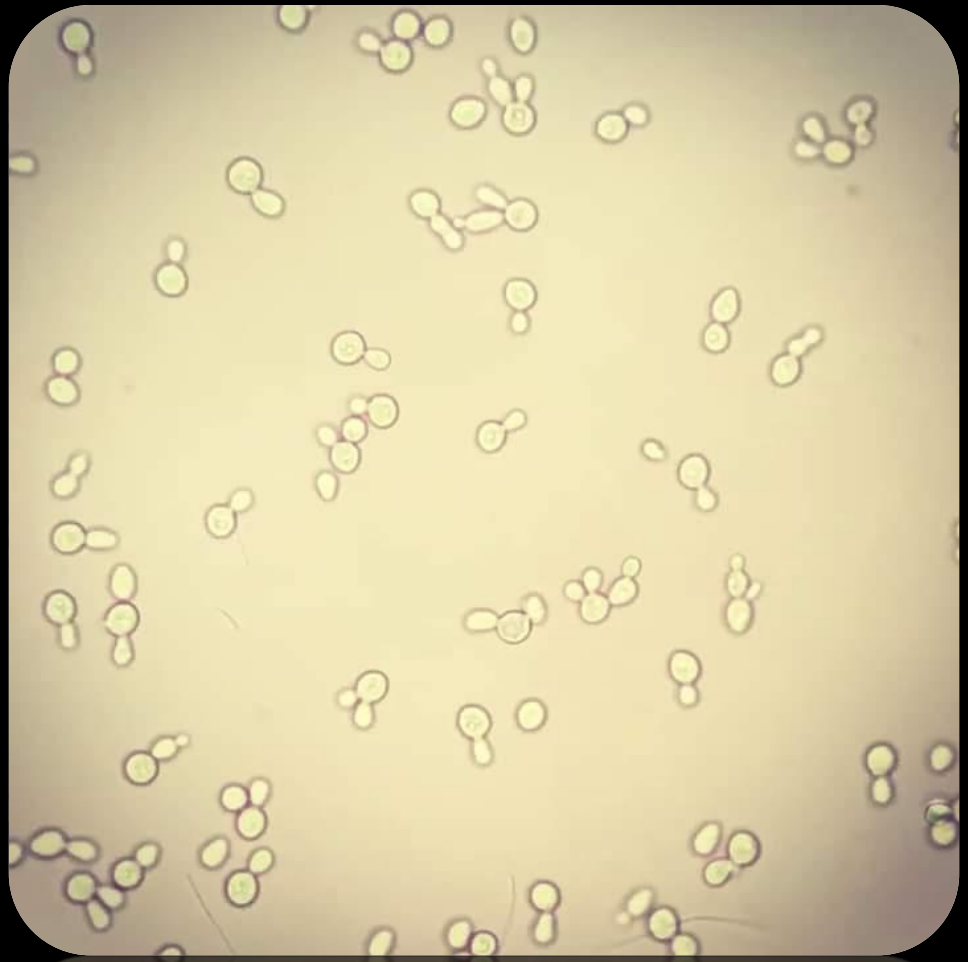
Yeast cells



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Parasite

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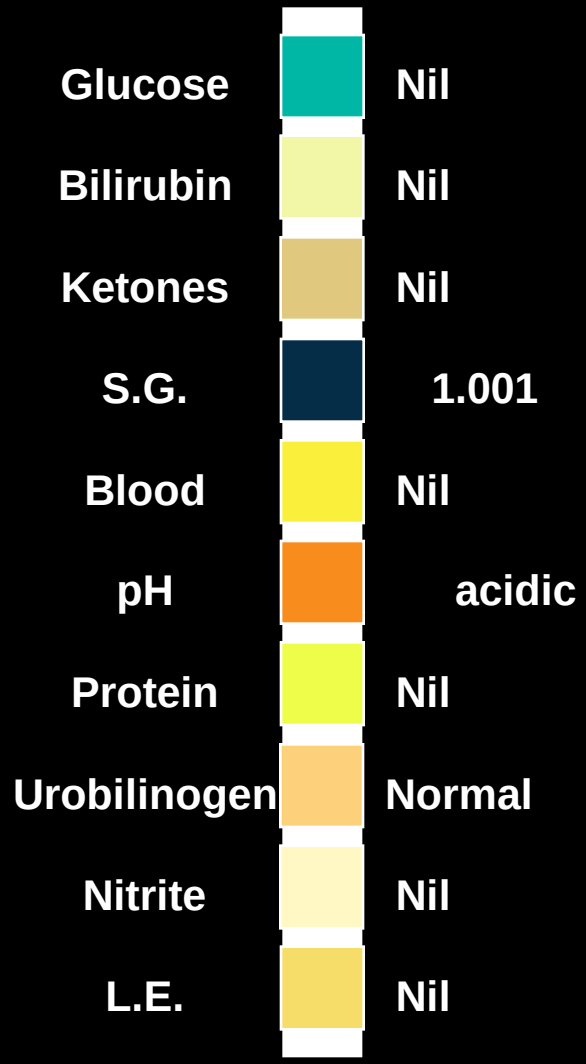
Report of others in urine sedimentation

Usually mucus express by plus +

Other reported by word seen

Case 1

Normal case

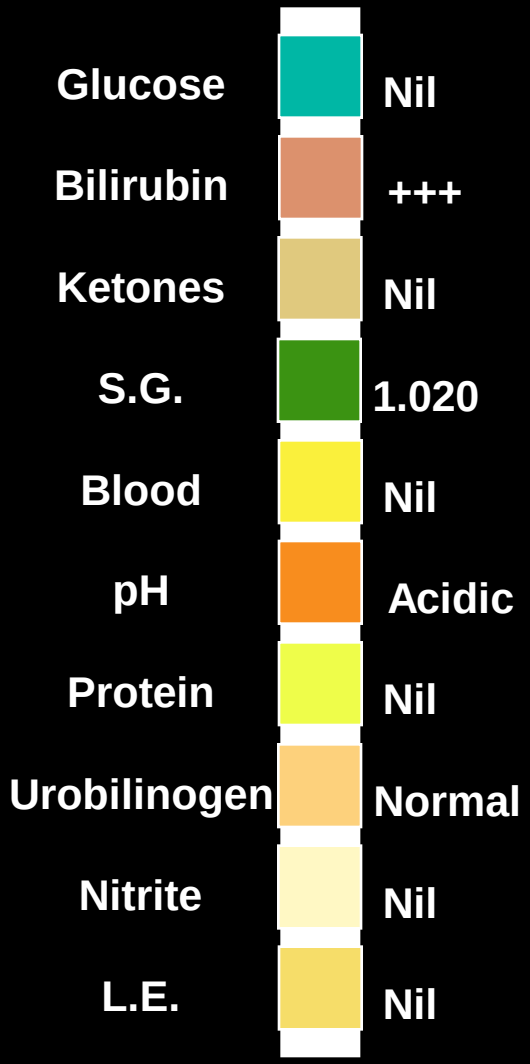


A 35-year old man undergoing routine pre employment drug screening.

Physical characteristics: Clear.
Microscopic: Normal

Case 2

Possible Obstructive gallbladder



A 42-year old woman presents with “dark urine”

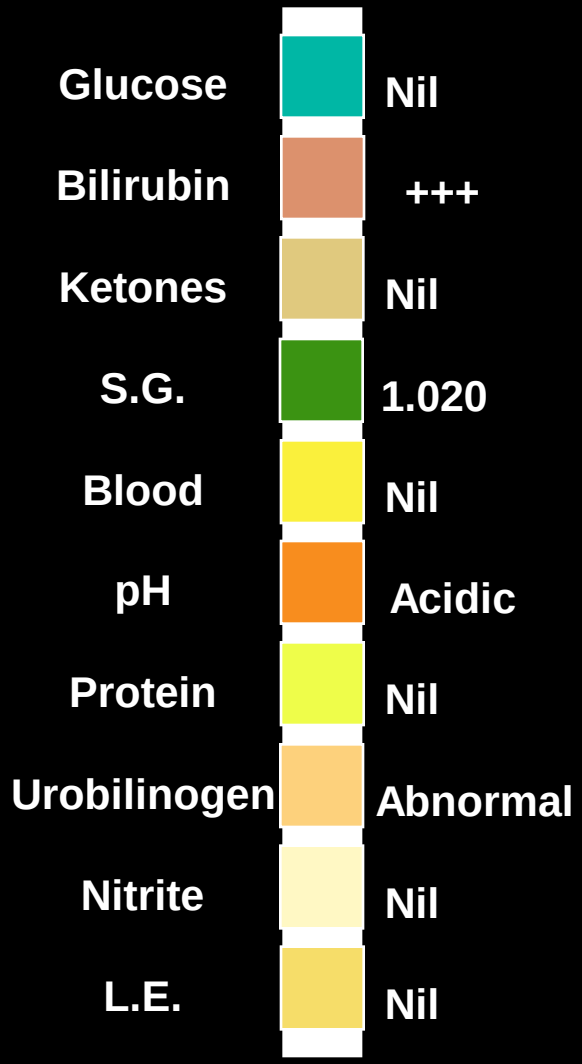
Physical characteristics: Red-brown.

Questions:

- What is your differential diagnosis?
- What tests would you order next? Why?

Case 3

Hepatic disease.



A 42-year old woman presents with “dark urine”

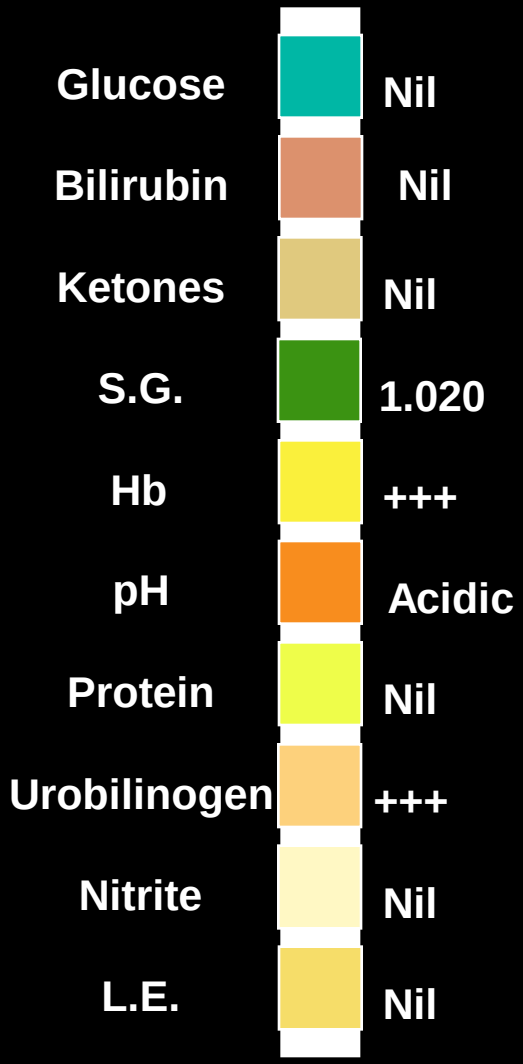
Physical characteristics: Red-brown.

Questions:

- What is your differential diagnosis?
- What tests would you order next? Why?

Case 4

Hemolytic disease



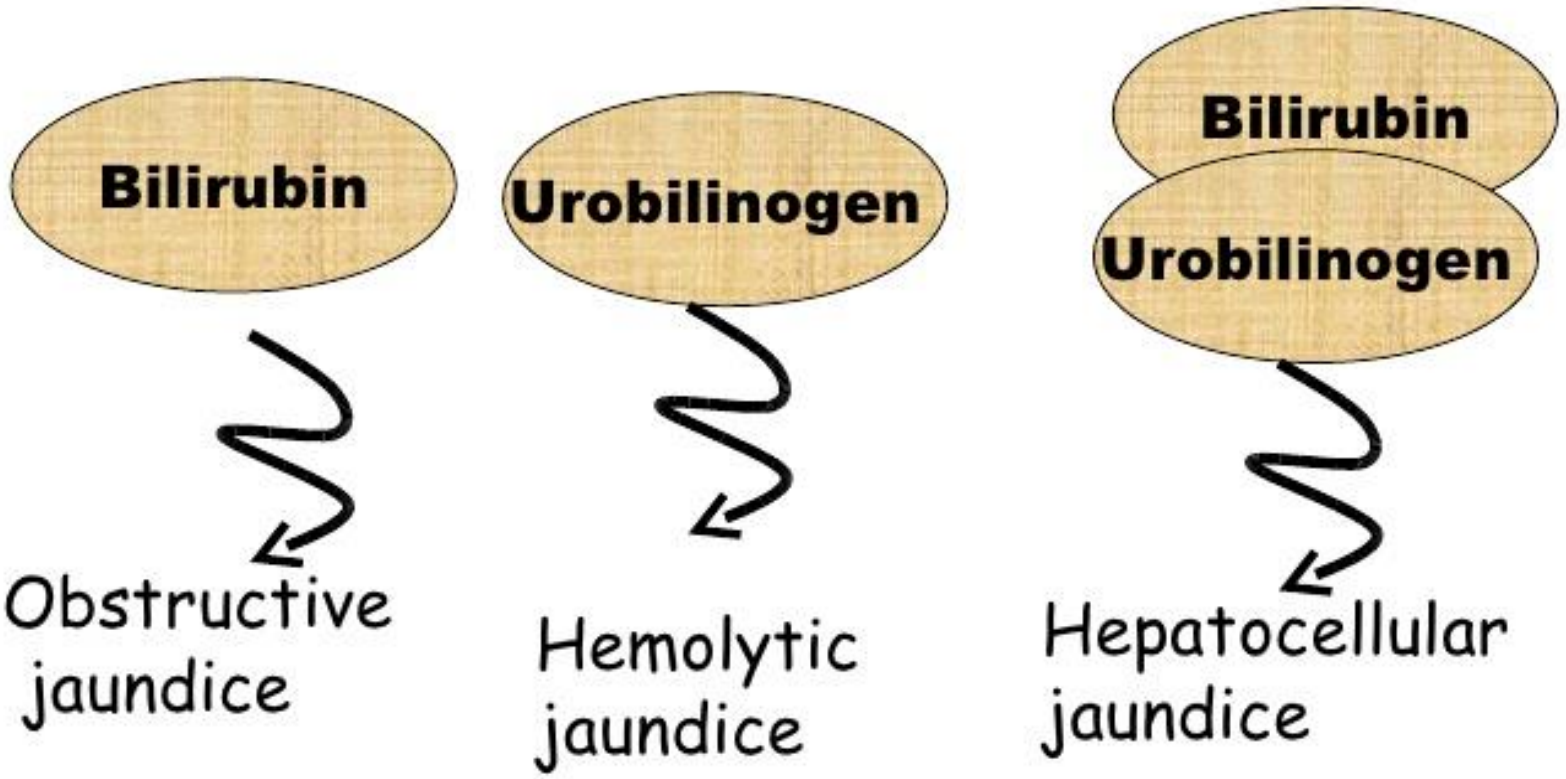
A 42-year old woman presents with “dark urine”

Physical characteristics: Red-brown.

Questions:

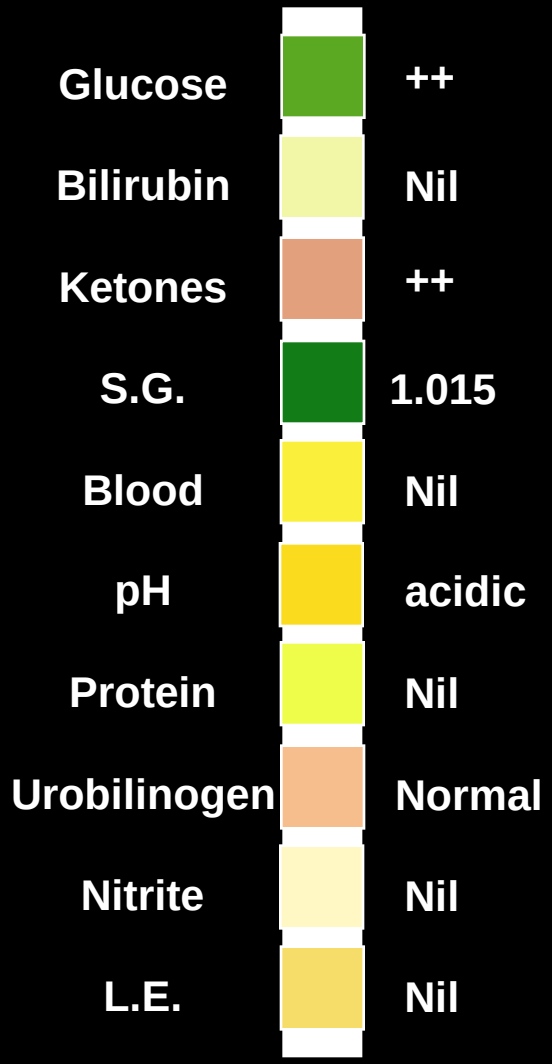
- What is your differential diagnosis?
- What tests would you order next?

Pigments


Bilirubin
Obstructive jaundice
Urobilinogen
Hemolytic jaundice
Bilirubin
Urobilinogen
Hepatocellular jaundice

Case 5

Diabetes
May be decompensated and with ketoacidosis



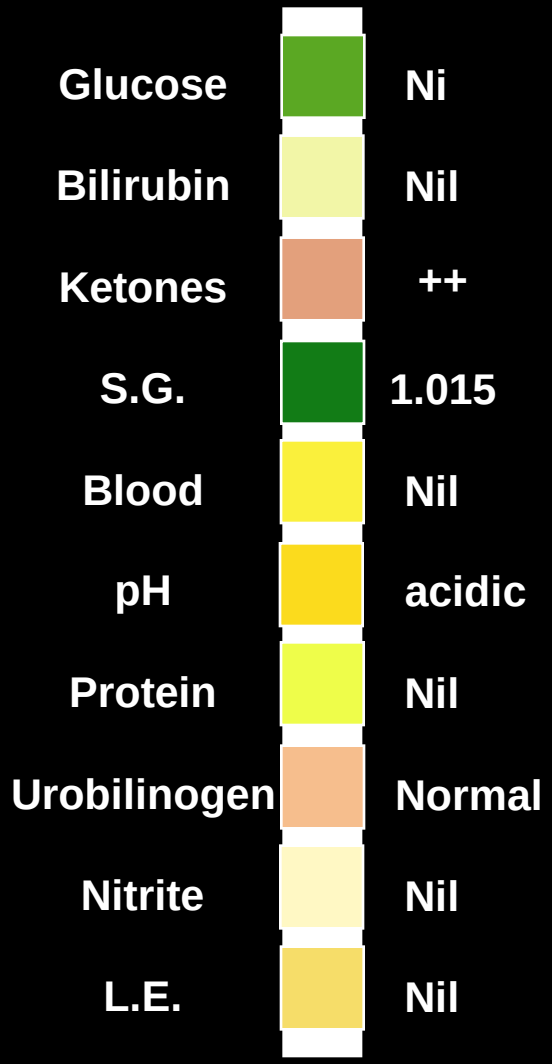
A 27-year old woman presents with severe abdominal pain.

Physical characteristics: clear-yellow.
Microscopic: Not performed.

Questions:
- What is the most likely diagnosis?
- What do you make of the ketone result?
- What do you expect to happen to the ketone measurement when treatment begins?

Case 6

Malnutrition



A 27-year old woman presents with severe abdominal pain.

Physical characteristics: clear-yellow.
Microscopic: Not performed.

Questions:

- What is the most likely diagnosis?
- What do you make of the ketone result?
- What do you expect to happen to the ketone measurement when treatment begins?

Faiza Ghlab